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• **CHEMICAL ABSTRACTS**, vol. 108, no. 9, 29
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fat and oil compositions' page 566 ;

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Description

The present invention relates to a coating for frozen food products, more particularly to a fat-based coating for frozen confectionery products.

US-A-2674534; US-A-5017392 and Chemical Abstract No. 108:74050m describe oil-containing emulsions suitable for coating frozen confections.

A typical fat-based coating for an ice cream bar contains about 80 calories per bar. Such typical fat-based coatings are made in a similar manner to chocolate and the largest portion of the calories comes from the fat which accounts for approximately 60% of the coating. It would be desirable to reduce the amount of calories in a coated confectionery product by reducing the amount of fat present in the fat-based coating.

Accordingly, the present invention provides a process for the preparation of an oil in water emulsion comprising mixing from 20 to 50% by weight based on the weight of the emulsion of an edible vegetable oil, from 1 to 10% by weight of a flavour, an emulsifier and an artificial sweetener and water and then deaerating the mixture.

The oil in water emulsion may conveniently contain from 25 to 40% and preferably from 27 to 35% by weight of the edible vegetable oil. The edible vegetable oil may be any oil or fat conventionally used in the trade which produces a snappy texture to the finished coating when applied to a frozen confectionery product, e.g. cocoa butter or a polyunsaturated fat. However it is preferably liquid at ambient temperature and may be soybean oil, coconut oil or cottonseed oil and may advantageously be a mixture of a hydrogenated vegetable oil such as coconut oil and a partially hydrogenated oil such as cottonseed oil (stearine) for instance in a ratio of 100:1 to 50:50.

A variety of possible flavouring agents may be used e.g. strawberry, fruit puree, vanillin, vanilla or cocoa depending on preference.

A wide range of emulsifiers may be used, for example, microcrystalline cellulose, mono- and di-glycerides, guar gum, lecithin or Xanthan Gum. The amount of emulsifier may be from 0.01 to 1.0% by weight based on the weight of oil in water emulsion.

An example of an artificial sweetener is aspartame. The amount of artificial sweetener may be from 0.01 to 1.0% by weight based on the weight of oil in water emulsion. Sugar may be present, if desired, but it is unnecessary.

The amount of water present in the oil in water emulsion may be from 40 to 75%, preferably from 50 to 70% and especially from 55 to 65% by weight based on the weight of the oil in water emulsion.

The oil in water emulsion is preferably a homogeneous mixture.

The process is advantageously carried out by blending the emulsifier with water, preferably cold water, with agitation, add the flavour and mix thoroughly, preferably warming to from 40° to 60°C, disperse the oil (or melted fat) into the mixture with agitation, homogenise, mix in

the sweetener and finally deaerate the mixture. Optionally, the mixture is pasteurised before homogenisation.

The deaeration is preferably carried out under a vacuum e.g. from 6.09×10^4 to 8.46×10^4 Pascals [from 457 mm to 635 mm of mercury] at a temperature from 35° to 65°C, preferably from 40° to 55°C. The deaeration is conveniently continued until the mixture has ceased to bubble vigorously, the temperature preferably not falling below 40° to 45°C.

The deaeration reduces the "dry-time" i.e. the time taken for the coating to harden when applied to a frozen dessert.

The oil in water emulsion may be applied to a frozen confectionery material for instance, iced milk, custard, mousse, yoghurt or an ice cream bar by conventional methods such as dipping, spraying or enrobing, for example at a temperature from 28° to 40°C, preferably from 30° to 37°C and especially from 32° to 35°C. After application to the frozen confectionery material, the oil in water emulsion may set to a sufficient extent by the fall in temperature caused by contact with the frozen confectionery material. The coated product is preferably afterwards refrozen to a temperature conveniently from -30° to -40°C, for example, in a freezing tunnel to complete the setting process, if necessary.

The oil in water emulsion has a reduced fat content and reduced calories when compared with conventional fat-based coatings but still retains its textural "snap".

The following Examples further illustrate the present invention. Parts are given by weight.

Example 1

0.030 parts of Xanthan Gum was blended into 62.937 parts of cold water and allowed to hydrate for 20 minutes with periodic agitation. The hydrated Xanthan Gum was heated at 49°C and 5 parts of cocoa flavour (E-11) together with 2 parts of cocoa flavour (F-27) were added and blended in thoroughly. 1 part of partially hydrogenated cottonseed oil (stearine) was melted at 60°C and then blended with 29 parts of coconut oil. The temperature of the oil blend was adjusted to 55°C and poured into the mixture of cocoa flavour, Xanthan Gum and water and mildly agitated to disperse the oils. The mixture was then homogenised firstly at 1.55×10^7 Pascals [2250 psi] (1st stage) and then 1.72×10^6 Pascals [250 psi] (2nd stage) at 55°C after which .033 part of aspartame was slurried into the mixture.

The mixture was then deaerated at 45°C in a vacuum chamber at 7.33×10^4 Pascals (550 mm of mercury) until bubbling had reached a minimum, the temperature not falling below 40° to 45°C.

The oil in water emulsion obtained had 50% less fat and 43% fewer calories than a conventional fat-based coating.

Example 2

An ice cream bar was dipped into the oil in water emulsion prepared in Example 1 at a temperature from 32° to 35°C to give a coated ice cream bar. The coating hardened within 45 to 60 seconds because the temperature of the coating dropped on contact with the frozen ice cream bar.

Example 3

An ice cream bar formed by extrusion through a freezing tunnel was enrobed by the oil in water emulsion prepared in Example 1 and the coated ice cream bar was then immediately passed through a further freezing tunnel to set the coating.

Claims

1. A process for the preparation of an oil in water emulsion which comprises mixing from 20 to 50% by weight based on the weight of the emulsion of an edible vegetable oil, from 0.1 to 10% by weight of a flavour, an emulsifier, an artificial sweetener and water and then deaerating the mixture.
2. A process according to claim 1 which comprises blending the emulsifier and water with agitation, adding the flavour and mixing thoroughly, dispersing the oil into the mixture with agitation, homogenising, mixing in the sweetener and finally deaerating the mixture.
3. A process according to claim 1 wherein deaeration of the mixture is carried out under vacuum.
4. A process according to claim 1 wherein the amount of emulsifier is from 0.01 to 1.0% by weight based on the weight of the oil in water emulsion.

Patentansprüche

1. Verfahren zur Herstellung einer Öl-in-Wasser-Emulsion, welches ein Mischen von 20 bis 50 Gew.-%, bezogen auf das Gewicht der Emulsion, eines eßbaren Pflanzenöls, von 0,1 bis 10 Gew.-% eines Geschmacksstoffes, eines Emulgators, eines künstlichen Süßungsmittels und Wasser und ein anschließendes Entlüften des Gemisches umfaßt.
2. Verfahren nach Anspruch 1, welches ein Mischen des Emulgators und des Wassers unter Rühren, ein Zusetzen des Geschmacksstoffes und ein gründliches Mischen, ein Eindispersgieren des Öls in das Gemisch unter Rühren, ein Homogenisieren, ein Einmischen des Süßungsmittels und schließlich ein Entlüften des Gemisches umfaßt.

3. Verfahren nach Anspruch 1, worin das Entlüften des Gemisches unter Vakuum vorgenommen wird.

4. Verfahren nach Anspruch 1, worin die Menge an Emulgator von 0,01 bis 1,0 Gew.-%, bezogen auf das Gewicht der Öl-in-Wasser-Emulsion, beträgt.

Revendications

1. Procédé pour la préparation d'une émulsion huile-dans-eau qui comprend le mélange de 20 à 50 % en poids, sur la base du poids de l'émulsion, d'une huile végétale comestible, de 0,1 à 10 % en poids d'arôme, d'un émulsifiant, d'un édulcorant artificiel et d'eau, puis le dégazage du mélange.
2. Procédé selon la revendication 1, qui comprend le malaxage de l'émulsifiant et de l'eau avec agitation, l'addition de l'arôme et de mélange complet, la dispersion de l'huile dans le mélange avec agitation, l'homogénéisation, le mélange dans l'édulcorant et finalement le dégazage du mélange.
3. Procédé selon la revendication 1, dans lequel le dégazage du mélange est exécuté sous dépression.
4. Procédé selon la revendication 1, dans lequel la quantité d'émulsifiant est comprise entre 0,01 et 1,0 % en poids sur la base du poids de l'émulsion huile-dans-eau.